Early Health Economic Evaluation of hrHPV screening in Uganda

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Background

Uganda

- High cervical cancer burden

25%
of cancer mortality

Current policy

- Based on visual inspection with acetic acid (**VIA**)
- Opportunistic, **low coverage**

WHO guidelines

- High-risk human papillomavirus (**hrHPV**) testing as primary test
- Transition from VIA to hrHPV-based screening

Objective

- To determine **minimum required levels of screening coverage and adherence to treatment** of precancerous lesions, as well as **maximum price per test**, for **hrHPV-based screen-and-treat strategy** to be cost-effective in Uganda from a **headroom perspective**

Methods

- Headroom is interpreted as **room for spending on full implementation of hrHPV screen-and-treat strategy per woman** (incl. programmatic costs, e.g. costs of campaigns to achieve required screening coverage and treatment adherence)
- **Headroom analysis** was conducted from a health system perspective under a strict willingness-to-pay (WTP) threshold (0.1 GDP per capita) for:
  - Varying **coverage** and treatment **adherence** levels (10-100%)
  - Varying **hrHPV test price** levels (10-45 I$)
- Based on headroom, **minimum required levels of coverage and adherence** and **maximum acceptable price per hrHPV test** were identified.

Screening strategies

HrHPV

HrHPV screen-and-treat (recommended strategy)

Comparator 1

VIA screen-and-treat
- Current policy
- Low coverage (5% per screening round)

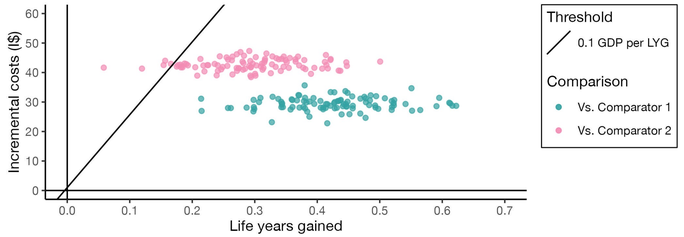
Comparator 2

VIA screen-and-treat
- Direct comparison with hrHPV (same intervals)
- Higher coverage (30%)

Results

Effectiveness gap

Incremental costs and life years gained per woman across 100 simulations with perfect coverage



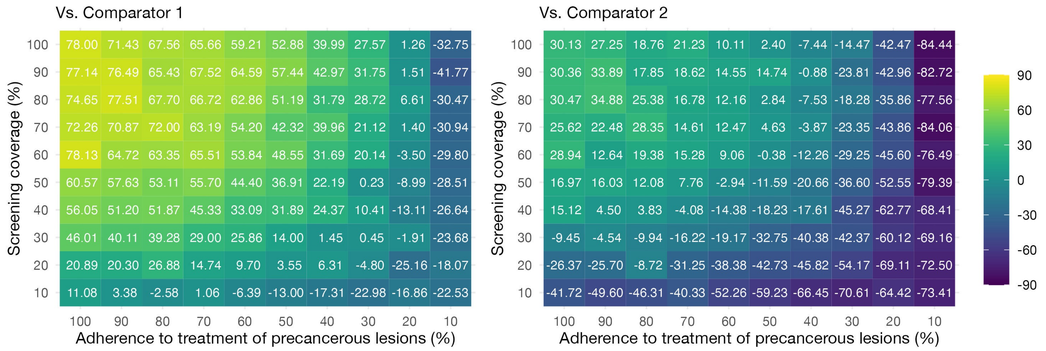
Headroom: hrHPV test price

Mean (SD) headroom at each price level per test

Headroom	Price per test	5 I$	10 I$	15 I$	20 I$	25 I$	30 I$	35 I$	40 I$
	vs Comparator 1	90.92 (21.14)	70.83 (21.52)	58.39 (20.02)	40.41 (21.95)	14.24 (16.94)	4.26 (19.12)	-21.01 (15.04)	-29.03 (17.53)
	vs Comparator 2	44.07 (16.31)	23.83 (12.53)	8.45 (19.04)	-7.75 (21.7)	-27.31 (18.27)	-36.33 (24.34)	-63.22 (18.56)	-77.90 (20.49)

Headroom: coverage and adherence levels

Mean headroom at each coverage and adherence level of hrHPV strategy across 20 simulations



Conclusions

Minimum levels

30% coverage
30% adherence
needed vs current policy

Maximum test price

30 I$ vs current policy
15-20 I$ if VIA-based coverage increases

- Even under very strict WTP, **the hrHPV screen-and-treat strategy** can be expected to be **cost-effective in Uganda**, provided **sufficient levels of coverage and adherence** are achieved.
- **Adherence to treatment** of precancerous lesions should be **prioritized together with screening coverage** in planning implementation.
- Minimum required levels of coverage and adherence can serve as **potential starting points for decision-makers** to set program targets in this setting.
- HrHPV tests need to be priced **below 30 I$** per test for the strategy to be cost-effective. **Reductions in test pricing are needed**, considering limited resource availability and dependence on external funding.

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